PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : H04L 12/46

A1

(11) International Publication Number: WO 00/21249

(43) International Publication Date: 13 April 2000 (13.04.00)

(21) International Application Number: PCT/US99/20811

(22) International Filing Date: 10 September 1999 (10.09.99)

(30) Priority Data:
09/166,753 5 October 1998 (05.10.98) US

(71) Applicant: MOTOROLA INC. [US/US]; 1303 East Algonquin Road, Schaumburg, IL 60196 (US).

(72) Inventor: CALLAWAY, Edgar, Herbert, Jr.; 11524 Clear Creek Place, Boca Raton, FL 33428 (US).

(74) Agents: NICHOLS, Daniel, K. et al.; Motorola Inc., Intellectual Property Dept., 1500 Gateway Boulevard, Boynton Beach, FL 33426-8292 (US).

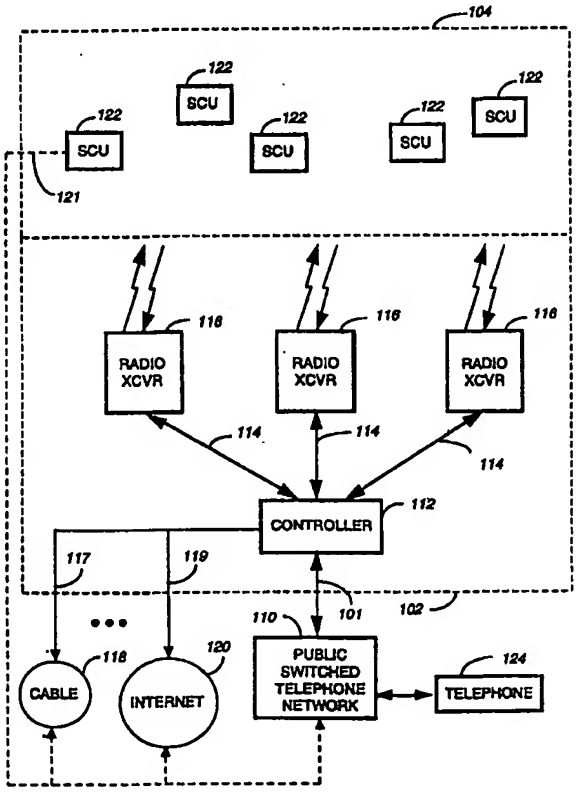
(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published
With international search report.

(54) Title: MULTIMEDIA COMMUNICATIONS IN A COMMUNICATION SYSTEM AND METHOD THEREFOR

(57) Abstract

A communications center (102) capable of communicating with an SCU (selective call unit) (122) over a plurality of communication media includes a transmitter (203, 218) and a processing system (210) coupled to the transmitter. The processing system is adapted to generate a message (402), choose a selected one of the plurality of communication media according to the content of the message (404-410), and cause the transmitter to transmit the message to the SCU over the selected one of the plurality of communication media (414).



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	**ES**	Spain	**LS**	Lesotho	**SI**	Slovenia
AM	Armenia	**FI**	Finland	**LT**	Lithuania	**SK**	Slovakia
AT	Austria	**FR**	France	**LU**	Luxembourg	**SN**	Senegal
AU	Australia	**GA**	Gabon	**LV**	Latvia	**SZ**	Swaziland
AZ	Azerbaijan	**GB**	United Kingdom	**MC**	Monaco	**TD**	Chad
BA	Bosnia and Herzegovina	**GE**	Georgia	**MD**	Republic of Moldova	**TG**	Togo
BB	Barbados	**GH**	Ghana	**MG**	Madagascar	**TJ**	Tajikistan
BE	Belgium	**GN**	Guinea	**MK**	The former Yugoslav Republic of Macedonia	**TM**	Turkmenistan
BF	Burkina Faso	**GR**	Greece			**TR**	Turkey
BG	Bulgaria	**HU**	Hungary	**ML**	Mali	**TT**	Trinidad and Tobago
BJ	Benin	**IE**	Ireland	**MN**	Mongolia	**UA**	Ukraine
BR	Brazil	**IL**	Israel	**MR**	Mauritania	**UG**	Uganda
BY	Belarus	**IS**	Iceland	**MW**	Malawi	**US**	United States of America
CA	Canada	**IT**	Italy	**MX**	Mexico	**UZ**	Uzbekistan
CF	Central African Republic	**JP**	Japan	**NE**	Niger	**VN**	Viet Nam
CG	Congo	**KE**	Kenya	**NL**	Netherlands	**YU**	Yugoslavia
CH	Switzerland	**KG**	Kyrgyzstan	**NO**	Norway	**ZW**	Zimbabwe
CI	Côte d'Ivoire	**KP**	Democratic People's Republic of Korea	**NZ**	New Zealand		
CM	Cameroon			**PL**	Poland		
CN	China	**KR**	Republic of Korea	**PT**	Portugal		
CU	Cuba	**KZ**	Kazakstan	**RO**	Romania		
CZ	Czech Republic	**LC**	Saint Lucia	**RU**	Russian Federation		
DE	Germany	**LI**	Liechtenstein	**SD**	Sudan		
DK	Denmark	**LK**	Sri Lanka	**SE**	Sweden		
EE	Estonia	**LR**	Liberia	**SG**	Singapore		

MULTIMEDIA COMMUNICATIONS IN A COMMUNICATION SYSTEM AND METHOD THEREFOR

Field of the Invention

This invention relates in general to communication systems, and particularly, to multimedia communications in a communication system and method therefor.

Background of the Invention

Radio communication systems that transmit selective call messages to SCUs (selective call units), such as cellular phones, pagers, and computers coupled to LANs (local area networks) have been in use for some time now. The type of selective call messages transmitted to SCUs range anywhere from personal messaging (e.g., pages, telephonic messages, e-mail) to information services (e.g., advertising, news, weather, internet access, etc.).

With the advent of PDA's (Personal Digital Assistants), the telecommunications industry has endeavored to consolidate an array of wired services (e.g., Ethernet, wired telephony, cable), and wireless services (e.g., cellular telephony, simplex two-way radio communications, one and two-way paging, etc.) into a single communication unit. As PDA's continue to advance in their ability to communicate over an expansive selection of communication media, each having multiband, and multiprotocol capabilities, it would be impractical to expect that a PDA user should be required to manually select a communication medium according to each intended use of the PDA. The same issue arises in a communication system capable of communicating with the SCUs over a multiplicity of communication media.

Accordingly, a need exists for a method and apparatus providing a simplified approach for selecting a communication medium in a multimedia communication system.

Brief Description of the Drawings

The present invention is pointed out with particularity in the appended claims. However, other features of the invention will become more apparent and best understood by referring to the following detailed description in conjunction with the accompanying drawings in which:

FIG. 1 is an electrical block diagram of a communication system utilized by the present invention;

FIGs. 2 and 3 are electrical block diagrams of the communications center and the SCU (selective call unit) of FIG. 1, respectively; and

FIGs. 4 and 5 depict flowcharts summarizing the operations of the communications center and the SCU, respectively, according to the present invention.

Description of the Preferred Embodiment

FIG. 1 is an electrical block diagram of a communication system 100 according to the present invention. The communication system 100 comprises a communications center 102 capable of communicating over wired and wireless communication media with a portable portion 104 comprising a plurality of SCUs 122 (selective call units). For performing wireless communications with the SCUs 122, the communications center 102 includes a controller 112 for controlling operation of a plurality of radio transceivers 116 by way of conventional communication links 114, such as, e.g., microwave links.

The radio transceivers 116 are utilized for communicating selective call messages to the SCU's 122 over multiple RF (radio frequency) bands and multiple transport protocols operating in these bands. Examples of transport protocols suitable for the present invention include, but are not limited to, paging protocols such as Motorola's FLEX™ family of communication protocols, and cellular technology protocols such as GSM (Global System for Mobile communications), CDMA (Code Division Multiple Access), TDMA (Time Division Multiple Access), etc. It will be appreciated that other transport protocols suitable for the present invention may be used.

As noted above, the SCUs 122 in the portable portion 104 are used for receiving selective call messages from the radio transceivers 116 operating

under the control of the controller 112. The selective call messages comprise either personal messages initiated by, for example, a caller utilizing a conventional telephone 124 connected to a conventional PSTN 110 (public switched telephone network), or information services provided by the communications center 102 such as e-mail, internet access, news, weather, stock market updates, sports updates, etc.

In the case of caller initiated messages, the controller 112 receives one or more messages from a caller by way of the PSTN 110. The PSTN 110 relays these messages to the controller 112 through a conventional telephone line 101 coupled to the controller 112. Upon receiving messages from the PSTN 110, the controller 112 processes the messages, and delivers them to the radio transceivers 116 for transmission to designated SCUs 122. As for information services, the controller 112 receives information services from service providers coupled to the communications center 102 via, for example, the PSTN 110, or other conventional communication means (e.g., internet, satellite, cable, microwave link, local area network, etc.). As with caller initiated messages, the controller 112 processes the information service messages, and relays them to the radio transceivers 116 for transmission to designated SCUs 122.

As noted earlier, the communications center 102 is also capable of communicating with the portable portion 102 over a multiplicity of conventional wired lines 101, 117, 119. This form of communication is dependent, however, on a user of an SCU 122 remotely connecting the SCU 122 to a wired communication medium 121 such as, e.g., the internet 120, a conventional cable communication systems 118, the PSTN 110 (via modem), a conventional local area network (e.g., Ethernet--not shown), etc.

FIGs. 2 and 3 are electrical block diagrams of the communications center 102 and the SCU 122 of FIG. 1, respectively. The electrical block diagram of the communications center 102 includes circuit elements for the controller 112 and the radio transceivers 116. The controller 112 comprises a conventional processing system 210 for controlling operation of the radio transceivers 116, a wired transceiver 218, and a conventional transceiver interface 205 for communicating messages to the radio transceivers 116. The wired transceiver 218 is capable of receiving and transmitting messages to a plurality of communication media such as, for example, the PSTN 110, the

internet 120, conventional cable communication systems 118, and local area networks just to mention a few.

The radio transceivers 116 comprise a conventional wireless transmitter 204 consisting of a RF transmitter 203 coupled to an antenna 201 for transmitting messages to the SCUs 122. Additionally, the radio transceivers 116 comprise a conventional wireless receiver 206 consisting of a RF receiver 207 coupled to an antenna 202 for receiving messages transmitted by the SCUs 122. The processing system 210 includes conventional computer hardware such as a computer system 212 and mass media 214 for performing the programmed operations of the controller 112.

The SCU 122 comprises a transceiver 303 consisting of wired and wireless transceivers. The wireless portion of the transceiver 303 consists of an antenna 302 for transmitting and intercepting RF signals to and from the communications center 102, and a RF transceiver 304 coupled thereto capable of performing conventional demodulation and modulation techniques for transmitting and receiving communication signals to and from the communications center 102 or any communication medium coupled thereto. Radio signals received by the RF transceiver 304 produce demodulated information, which is coupled to a processor 308 that processes the received messages. Analogously, the processor 308 generates messages which are then modulated and transmitted to the communications center 102 by the wireless transceiver 303. As an alternative means for communications, the transceiver 303 consists of a conventional wired transceiver 311, which is coupled to a wired communication medium 121 such as, e.g., the internet 120, a cable communication systems 118, the PSTN 110 (via modem), a local area network, etc. A conventional power switch 306, coupled to the processor 308, is used to control the supply of power to the transceiver 303 from a conventional battery source, thereby providing a battery saving function.

To perform the necessary functions of the SCU 122, the processor 308 includes a microprocessor 312, and a memory 310 that includes, for example, a random access memory (RAM), a read-only memory (ROM), and an electrically erasable programmable read-only memory (EEPROM). The processor 308 is programmed by way of the ROM to process incoming messages transmitted by the communications center 102, and to generate and

transmit messages originated by the user of the SCU 122 to the communications center 102. When receiving messages from the communications center 102, the processor 308 decodes an address in the demodulated data of the received message, compares the decoded address with one or more addresses assigned and stored in the EEPROM of the SCU 122, and when a match is detected, proceeds to process the remaining portion of the message.

In the event a match is detected, the processor 308 stores the message in the RAM, and a call alerting signal is generated to alert a user that a message has been received. The call alerting signal is directed to a conventional audible or tactile alerting device 316 for generating an audible or tactile call alerting signal. The message can be accessed by the user through user controls 314, which provide functions such as lock, unlock, delete, read, etc. More specifically, by the use of appropriate functions provided by the user controls 314, the message is recovered from the RAM, and conveyed to the user by way of a presentation circuit 313, which includes a display 318 (e.g., a conventional liquid crystal display--LCD) for visualizing messages and an audio circuit 317 for audio messages.

As noted earlier, the SCUs 122 and the communications center 102 are capable of communicating messages with each other over a multiplicity of communications media consisting of wired and wireless networks. The wireless networks include, but are not limited to, networks that employ paging transport protocols such as any one of the FLEX™ family of communication protocols (e.g., FLEX™, ReFLEX™, InFLEXion™), and/or networks that operate cellular transport protocols such as, for example, GSM, CDMA, TDMA, etc. Over wired networks, the communications center 102 and the SCU's 122 communicate, for example, over the internet 120, cable communication systems 118, the PSTN 110, and local area networks. In view of such a vast array of multimedia available for communicating messages between the communications center 102 and the SCU's 122, FIGs. 4 and 5 illustrate how optimal use can be made of such capabilities without over burdening the user of an SCU 122 or the service provider of the communications center 102.

FIGs. 4 and 5 depict flowcharts 400, 500 summarizing the programmed operations of the communications center 102 and the SCU 122, respectively,

according to the present invention. Flowchart 400 begins with step 402 where the controller 112 generates a message in response to a caller initiated message, or any one of the information services discussed above, such as, for example, a data request from an SCU 122 communicating with the internet (over a wireless or wired connection). In step 404, the controller 112 selects a communication medium according to the content of the message generated in step 402.

The selection step includes singly or in combination several possible embodiments. For example, the selection of a communication medium may be based on the level of message traffic in each of the plurality of communication media. Alternatively, or in combination, the selection step selects a communication medium that provides secured communications when the content of the message is designated sensitive by an originator of the message. In yet another embodiment, the selection step operates in conjunction with step 406, whereby in said step the controller 112 receives from a user of the SCU 122 user preferences dictating how to choose a selected one of the plurality of communication media. The user preferences in turn comprise singly or in combination any one of several preferences discussed below.

In a first embodiment, the user preferences comprise a preference for minimizing the cost of utilizing a selected one of the plurality of communication media according to, for example, the size (e.g., number of bytes) of the message created in step 402. For a user who is cost sensitive, this embodiment provides a preference for selecting the least expensive communication medium available for transmitting messages to the SCU 122--especially when the message to be transmitted is large (e.g., download of graphics files, software programs, large spreadsheets, etc.). In yet another embodiment, the user preferences comprise a preference for communicating messages with no more than a predetermined maximum latency (e.g., no more than a 10 minute delay). This preference may also function as a factor in minimizing cost.

In combination with any of the foregoing embodiments, the user preferences may also designate a preference for utilizing secured communications when the message generated in step 402 is designated sensitive by an originator of the message. It will be appreciated by one of

ordinary skill in the art that alternative user preferences suitable to the present invention and not mentioned above may be used.

When user preferences are made available by a user of the SCU 122, the controller 112 proceeds to step 408 where it utilizes the preferences discussed above. Alternatively, however, when user preferences are not available, the controller 112 proceeds to step 410. In this step, the controller 112 utilizes default preferences set by the service provider of the communications center 102. The default preferences preferably include any combination of the user preferences discussed above that would be helpful to the service provider in optimizing operational costs or the like.

Once a communication medium has been selected, the controller 112 proceeds to step 412. In this step, the controller 112 informs the SCU 122 (in any one of two embodiments) of the selected communication medium chosen in steps 408 or 410. In a first embodiment, the communications center 102 informs the SCU 122 of the selected communication medium over a conventional common control channel. Preferably, the common control channel is used by the population of SCU's 122 to communicate short control messages to and from the communications center 102. Once the SCU 122 has been informed of the selected communication medium, the controller 112 proceeds to step 414 where it causes the radio transceiver 116 to transmit the message to the SCU 122 over the selected communication medium. In an alternative embodiment, header information is added to the message transmitted to the SCU 122 in step 414 over the selected communication medium. The header information serves to inform the SCU 122 of the communication medium selected in the preceding steps discussed above.

The foregoing embodiments provide the user of the SCU 122 a transparent interface for communicating messages to and from the communications center 102. That is, the user of the SCU 122 need not be concerned about which communication medium to select for each message transmitted or received to or from the communications center 102. The embodiments discussed above are advantageous over the prior art, which at the present time does not provide a transparent interface for communicating messages over a plurality of communication media by way of a multimedia PDA.

The reader's attention is now directed to the operational steps of the SCU 122 as depicted in flowchart 500 of FIG. 5. Flowchart 500 begins with step 502 where the SCU 122 receives an instruction from a user of the SCU 122 to communicate with a selected one of a plurality of communication services provided by the communication system. It will be appreciated that alternatively, the communication services are not associated with any particular communication system. Rather, under this embodiment, the SCU 122 communicates with any one of the communication services over a selected communication medium that provides the communication service of interest.

Preferably, the communication services include either personal messaging or information services. Personal messaging entails, for example, caller initiated messages, or messages initiated and transmitted by the user of the SCU 122 by way of the SCU 122 for communicating with other SCU 122 users or other recipients which the communications center 102 can communicate with over conventional means (e.g., the PSTN 110). Information services, on the other hand, involves, for example, e-mail, internet access, news, weather, stock market updates, sports updates, etc. For communication services involving two-way communications (e.g., e-mail, internet access, SCU-to-SCU communications), the SCU 122 generally receives an instruction from the user of the SCU 122 to relay information to the communications center 102, or directly to the communication service without intervention by the communications center 102. For example, in the case of a user communicating with the internet, the user may request that the communications center 102 connect the user to a particular web site of interest, and download the web page graphics to the user's SCU 122. Alternatively, a user may connect to the internet after selecting a communication medium providing such service. In the case of e-mail messaging, a user may instruct the SCU 122 to send an e-mail message directing the communications center 102 to relay the message to a designated recipient. Alternatively, a user may instruct the SCU 122 to send an e-mail message (without involving the communications center 102) by way of a communication medium providing internet service.

In any event, before invoking communications with the communications center 102, the SCU 122 is programmed in step 504 to select

a communication medium according to the content of each message to be transmitted and received to an from the communication service selected by the user of the SCU 122. As with the operational embodiments discussed above for the controller 112, selection step 504 includes singly or in combination several possible embodiments.

In a first embodiment, for example, the selection of a communication medium is based on the level of message traffic in each of the plurality of communication media measured by the SCU 122. Alternatively, or in combination, the selection step selects a communication medium that provides secured communications when the content of the message is designated sensitive by an originator of the message. In yet another embodiment, the selection step operates in conjunction with step 506, whereby in said step the SCU 122 receives from a user of the SCU 122, user preferences dictating how to choose a selected one of the plurality of communication media. The user preferences in turn comprise singly or in combination any one of several preferences discussed below.

In a first embodiment, the user preferences comprise a preference for minimizing the cost of utilizing a selected one of the plurality of communication media according to, for example, the size of the message intended to be communicated. For a user who is cost sensitive, this embodiment provides a preference for selecting the least expensive communication medium available for transmitting messages from the SCU 122--especially when the message to be transmitted is large (e.g., download of graphics files, software programs, large spreadsheets, etc.).

In yet another embodiment, the user preferences comprise a preference for communicating messages with no more than a predetermined maximum latency (e.g., no more than a 10 minute delay). This preference also functions as a factor in minimizing cost. In combination with any of the foregoing embodiments, the user preferences may also designate a preference for utilizing secured communications when the user of the SCU 122 indicates that message communications are sensitive. For example, a user of the SCU 122 who is requesting to send a request for the sale or purchase of stocks over the internet may seek a secured communication medium (e.g., utilizing encryption) for making such a transaction. It will be appreciated by one of ordinary skill in the art that alternative user

preferences suitable to the present invention and not mentioned above may also be used.

When user preferences are made available by a user of the SCU 122, the processor 308 proceeds to step 508 where it utilizes the preferences as discussed above. Alternatively, however, when user preferences are not available, the processor 308 proceeds to step 510. In this step, the processor 308 utilizes default preferences preprogrammed in the memory 310 of SCU 122. These default preferences preferably include any combination of the user preferences discussed above.

Once a communication medium has been selected, the SCU 122 proceeds to step 512. In this step, the SCU 122 informs the communications center 102 (in any one of two embodiments) of the selected communication medium chosen in steps 508 or 510. In a first embodiment, the SCU 122 informs the communications center 102 of the selected communication medium over a conventional common control channel. Once the communications center 102 has been informed of the selected communication medium, the SCU 122 proceeds to step 514 where it causes the radio transceiver 116 to transmit, and when appropriate, receive messages from the communications center 102 over the selected communication medium. In an alternative embodiment, header information is added to the message transmitted by the SCU 122 in step 514. The header information serves to inform the communications center 102 of the communication medium selected in the preceding steps discussed above.

As should be evident from the foregoing discussions, the present invention is substantially advantages over the prior art. Particularly, the present invention provides a method in a SCU 122 for transparently selecting a communication medium according to user preferences provided by a user of the SCU 122. Similarly, the same or similar user preferences are used by the communications center 102 for selecting a corresponding communication medium for communicating with a SCU 122. In either case, the selection of communication media is transparent to both the user of the SCU 122 and the service provider of the communications center 102.

Although the invention has been described in terms of a preferred embodiment it will be obvious to those skilled in the art that many alterations and variations may be made without departing from the

invention. Accordingly, it is intended that all such alterations and variations be considered as within the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

CLAIMS

1. In a communications center capable of communicating with a SCU (selective call unit) over a plurality of communication media, a method comprising the steps of:

generating a message;

choosing a selected one of the plurality of communication media according to the content of the message; and

transmitting the message to the SCU over the selected one of the plurality of communication media.

2. The method as recited in claim 1, wherein the plurality of communication media comprise wired and wireless communication media.

3. The method as recited in claim 1, further comprising the step of choosing the selected one of the plurality of communication media according to the level of message traffic in each of the plurality of communication media.

4. The method as recited in claim 1, further comprising the step of choosing the selected one of the plurality of communication media that provides secured communications when the content of the message is designated sensitive by an originator of the message.

5. The method as recited in claim 1, further comprising the step of informing the SCU of the selected one of the plurality of communication media chosen.

6. The method as recited in claim 5, wherein the communications center informs the SCU of the selected one of the plurality of communication media over a common control channel.

7. The method as recited in claim 5, wherein the communications center informs the SCU of the selected one of the plurality of communication media by including header information in the message transmitted to the SCU over the selected one of the plurality of communication media.

8. The method as recited in claim 1, further comprising the step of receiving from a user of the SCU, user preferences dictating how to choose the selected one of the plurality of communication media.

9. The method as recited in claim 8, wherein the user preferences comprise a preference for minimizing the cost of utilizing a selected one of the plurality of communication media.

10. The method as recited in claim 8, wherein the user preferences comprise a preference for communicating messages with no more than a predetermined maximum latency.

11. The method as recited in claim 8, wherein the user preferences comprise a preference for utilizing secured communications when a message is designated sensitive by an originator of the message.

12. In a SCU (selective call unit) capable of communicating with a communications center over a plurality of communication media, a method comprising the steps of:

receiving an instruction from a user of the SCU to communicate with a selected one of a plurality of communication services provided by the communications center;

choosing a selected one of the plurality of communication media according to the content of each message transmitted or received by the SCU to and from the selected one of the plurality of communication services; and

transmitting or receiving each message over the selected one of the plurality of communication media.

13. The method as recited in claim 12, wherein the plurality of communication media comprise wired and wireless communication media.

14. The method as recited in claim 12, further comprising the step of choosing the selected one of the plurality of communication media according to the level of message traffic in each of the plurality of communication media.

15. The method as recited in claim 12, further comprising the step of choosing the selected one of the plurality of communication media that provides secured communications when the content of a message is designated sensitive by an originator of the message.

16. The method as recited in claim 12, further comprising the step of informing the communications center of the selected one of the plurality of communication media chosen.

17. The method as recited in claim 16, wherein the SCU informs the communications center of the selected one of the plurality of communication media over a common control channel.

18. The method as recited in claim 16, wherein the SCU informs the communications center of the selected one of the plurality of communication media by including header information in a message transmitted to the communications center over the selected one of the plurality of communication media.

19. The method as recited in claim 12, further comprising the step of receiving from a user of the SCU, user preferences dictating how to choose the selected one of the plurality of communication media.

20. The method as recited in claim 19, wherein the user preferences comprise a preference for minimizing the cost of utilizing a selected one of the plurality of communication media.

21. The method as recited in claim 19, wherein the user preferences comprise a preference for communicating messages with no more than a predetermined maximum latency.

22. The method as recited in claim 19, wherein the user preferences comprise a preference for utilizing secured communications when a message is designated sensitive by an originator of the message.

23. In a SCU (selective call unit) capable of communicating over a plurality of communication media, a method comprising the steps of:

receiving an instruction from a user of the SCU to communicate with a selected one of a plurality of communication services;

choosing a selected one of the plurality of communication media according to the content of each message transmitted or received by the SCU to and from the selected one of the plurality of communication services; and

transmitting or receiving each message over the selected one of the plurality of communication media.

24. A communications center capable of communicating with a SCU over a plurality of communication media, comprising:

a transmitter; and

a processing system coupled to the transmitter, the processing system adapted to:

generate a message,

choose a selected one of the plurality of communication media according to the content of the message, and

cause the transmitter to transmit the message to the SCU over the selected one of the plurality of communication media.

25. The communications center as recited in claim 24, further comprising a receiver, and wherein the processing system is adapted to cause the receiver to receive messages from the SCU over the selected one of the plurality of communication media.

26. The communications center as recited in claim 25, wherein the transmitter comprises a wired and wireless transmitter, and the receiver comprises a wired and wireless receiver.

27. A SCU (selective call unit) capable of communicating with a communications center over a plurality of communication media, comprising:

a transceiver; and

a processor coupled to the transceiver, the processor adapted to:

receive an instruction from a user of the SCU to connect to a selected one of a plurality of communication services provided by the communications center;

choose a selected one of the plurality of communication media according to the content of each message transmitted or received by the SCU to and from the selected one of the plurality of communication services; and

cause the transceiver to transmit or receive each message over the selected one of the plurality of communication media.

28. The communications center as recited in claim 27, wherein the transceiver comprises a wired and wireless transceiver.

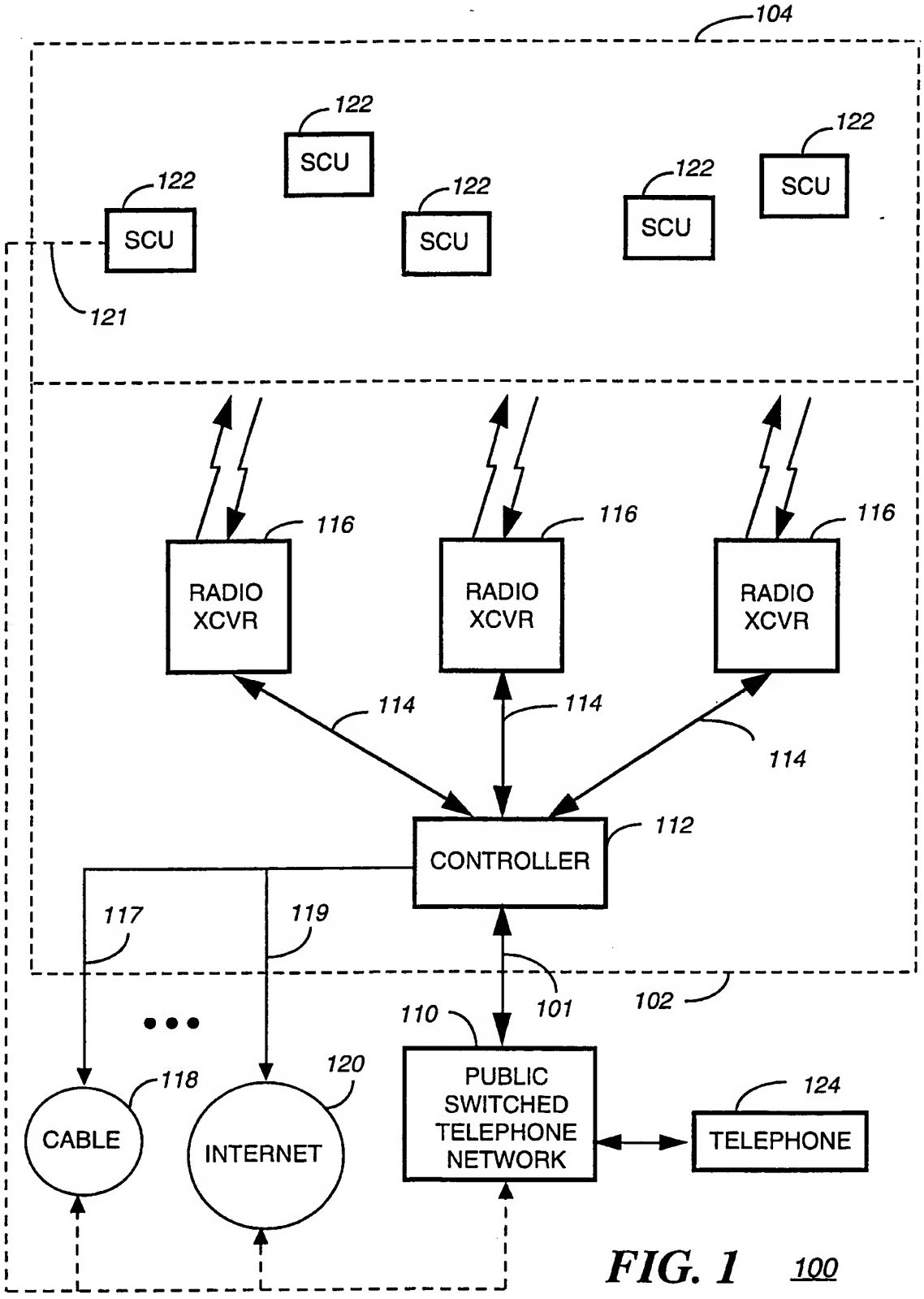

104
122
SCU
122
SCU
122
SCU
122
SCU
122
SCU
121
116
RADIO XCVR
116
RADIO XCVR
116
RADIO XCVR
114
114
114
112
CONTROLLER
117
119
101
102
110
PUBLIC SWITCHED TELEPHONE NETWORK
118
CABLE
120
INTERNET
124
TELEPHONE

FIG. 1 100

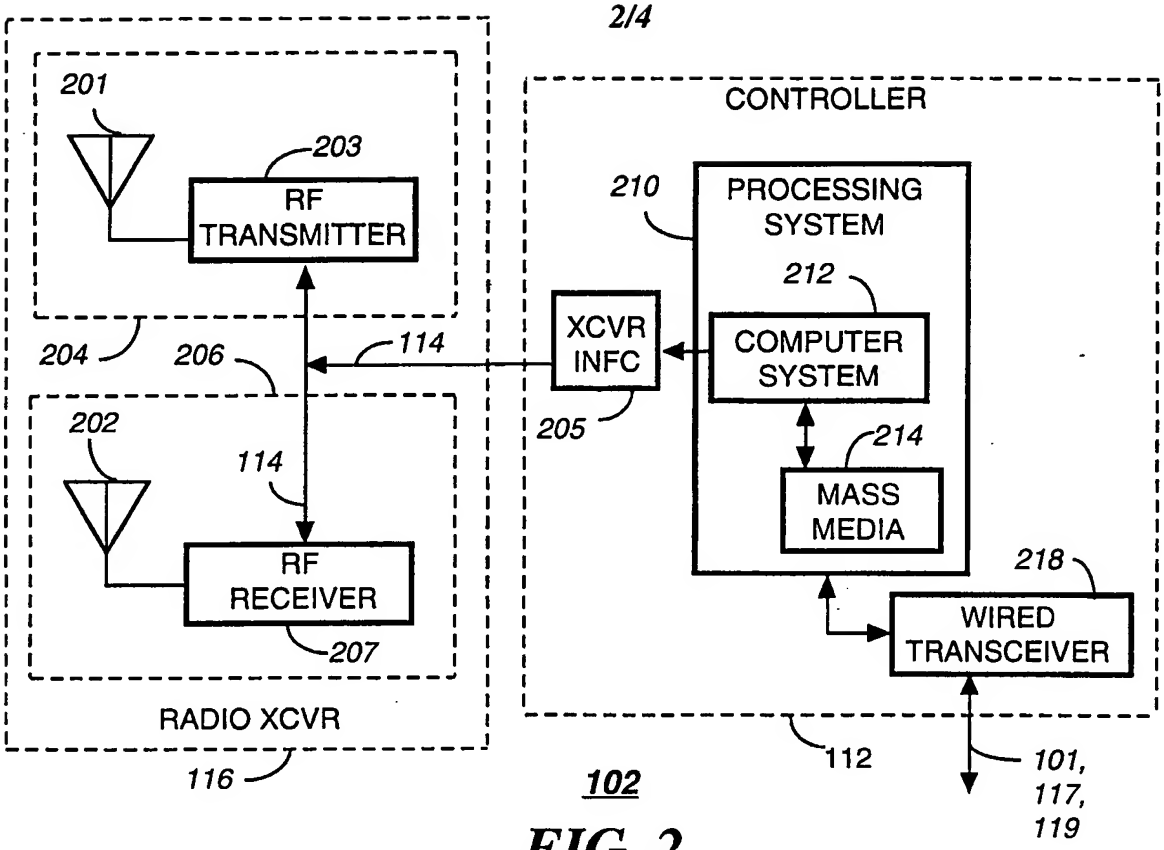

201
203
RF TRANSMITTER
204
206
114
202
114
RF RECEIVER
207
RADIO XCVR
116
CONTROLLER
210
PROCESSING SYSTEM
212
XCVR INFC
COMPUTER SYSTEM
205
214
MASS MEDIA
218
WIRED TRANSCEIVER
112
101, 117, 119
102

FIG. 2

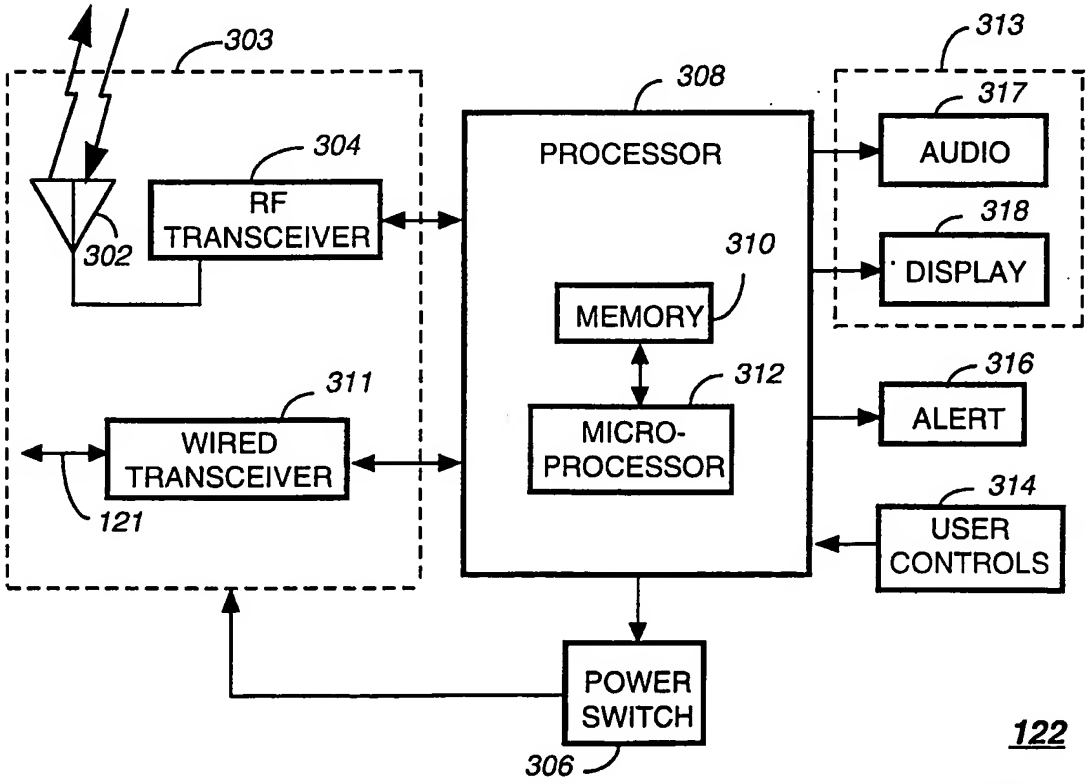
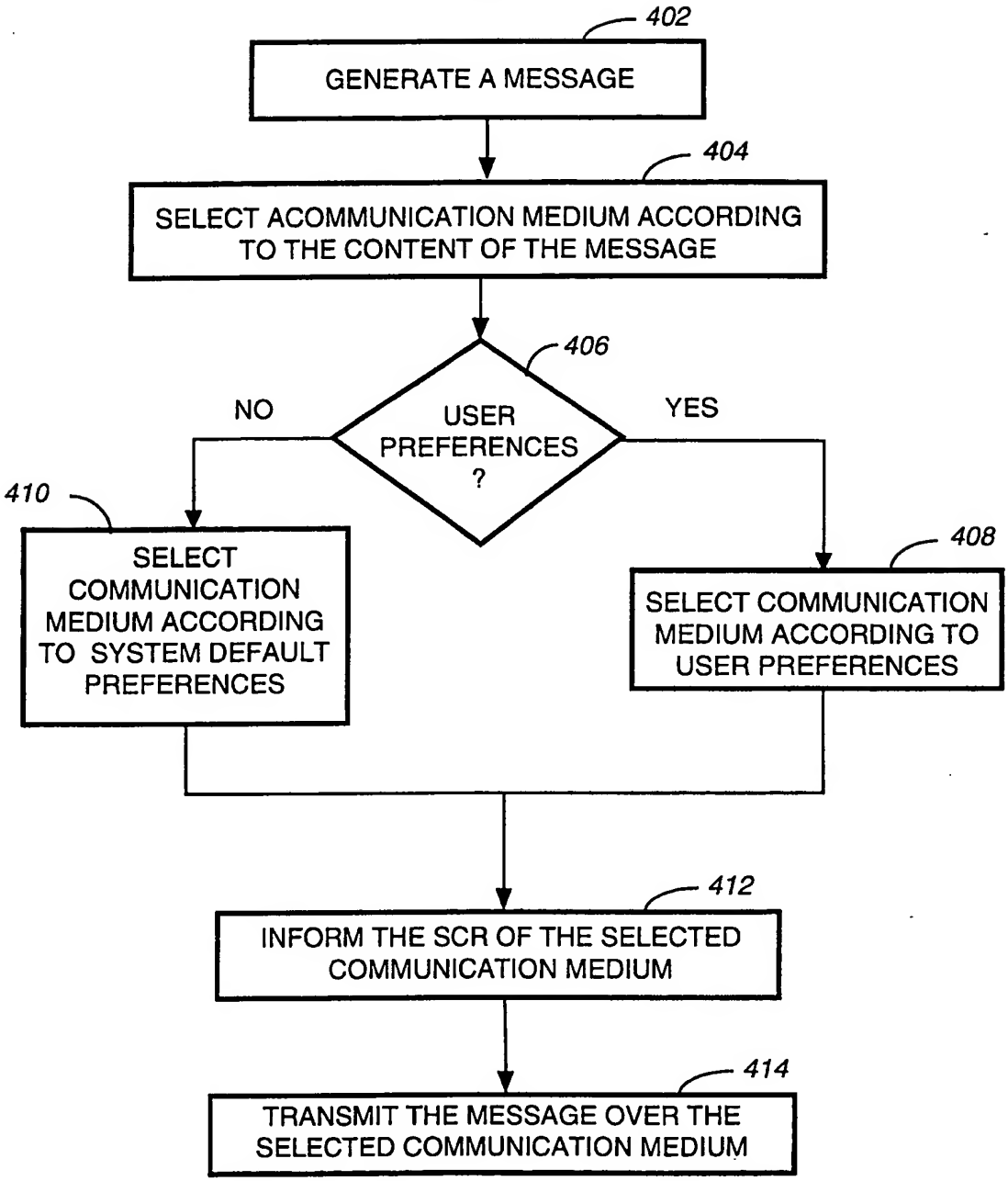

303
304
RF TRANSCEIVER
302
311
WIRED TRANSCEIVER
121
308
PROCESSOR
310
MEMORY
312
MICRO-PROCESSOR
313
317
AUDIO
318
DISPLAY
316
ALERT
314
USER CONTROLS
POWER SWITCH
306
122

FIG. 3


402
GENERATE A MESSAGE
404
SELECT ACOMMUNICATION MEDIUM ACCORDING TO THE CONTENT OF THE MESSAGE
406
USER PREFERENCES ?
NO
YES
410
SELECT COMMUNICATION MEDIUM ACCORDING TO SYSTEM DEFAULT PREFERENCES
408
SELECT COMMUNICATION MEDIUM ACCORDING TO USER PREFERENCES
412
INFORM THE SCR OF THE SELECTED COMMUNICATION MEDIUM
414
TRANSMIT THE MESSAGE OVER THE SELECTED COMMUNICATION MEDIUM

400

FIG. 4

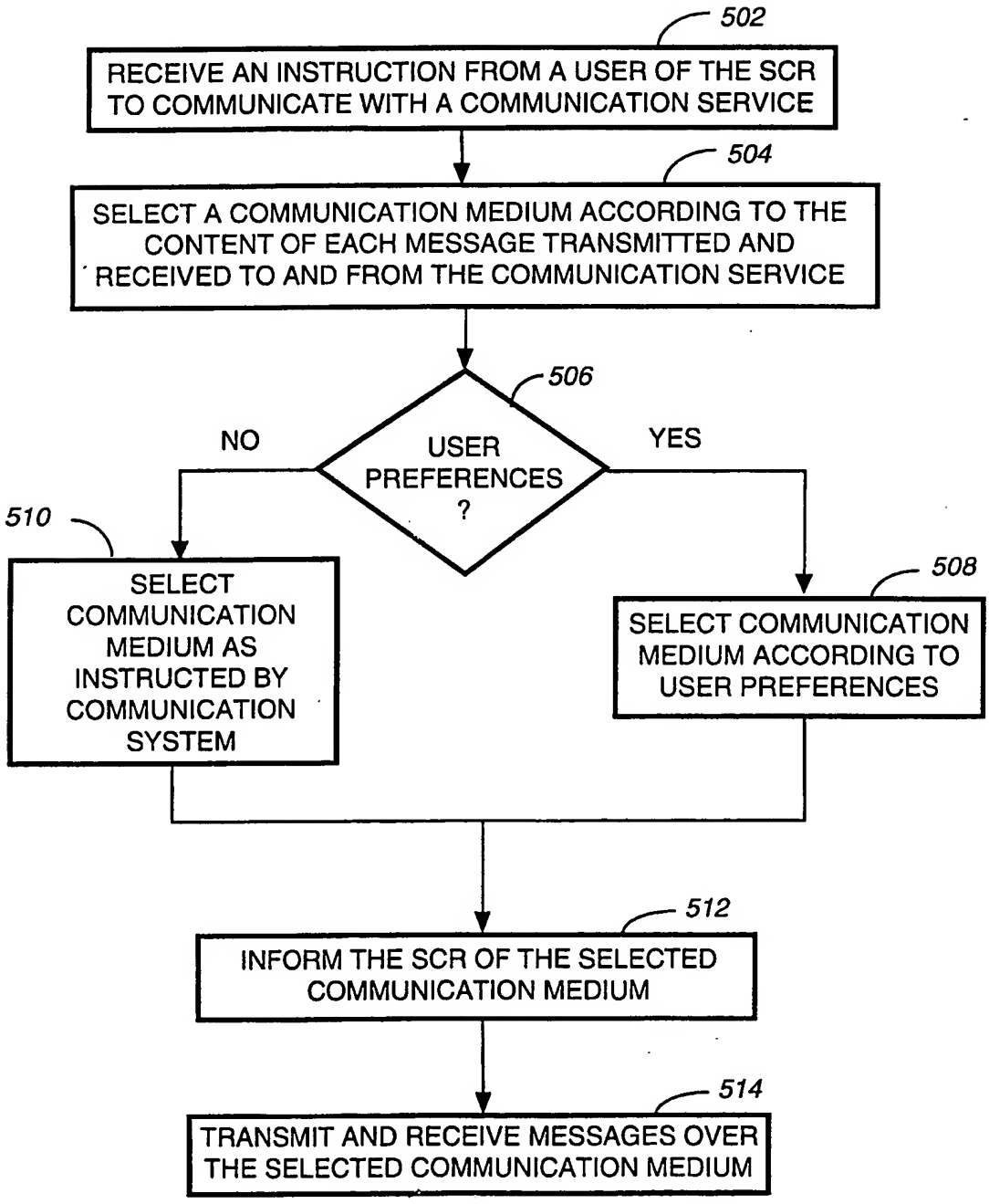

502
RECEIVE AN INSTRUCTION FROM A USER OF THE SCR TO COMMUNICATE WITH A COMMUNICATION SERVICE
504
SELECT A COMMUNICATION MEDIUM ACCORDING TO THE CONTENT OF EACH MESSAGE TRANSMITTED AND RECEIVED TO AND FROM THE COMMUNICATION SERVICE
506
USER PREFERENCES ?
NO
YES
510
SELECT COMMUNICATION MEDIUM AS INSTRUCTED BY COMMUNICATION SYSTEM
508
SELECT COMMUNICATION MEDIUM ACCORDING TO USER PREFERENCES
512
INFORM THE SCR OF THE SELECTED COMMUNICATION MEDIUM
514
TRANSMIT AND RECEIVE MESSAGES OVER THE SELECTED COMMUNICATION MEDIUM

FIG. 5 **500**

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/20811

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :H04L 12/46
US CL : 370/352

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 370/338, 349, 354, 355, 401, 465; 455/507,517, 552, 553, 556, 557

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WEST, EAST
search terms: multimedia, PDA, selectable call units, wireless, medium

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,406,643 A (BURKE et al.) 11 April 1995, abstract, figs. 3-7, col. 5, lines 47-49.	1-28
Y,E	US 5,960,325 A (GRAHAM) 28 September 1999, abstract.	1-28
A	US 5,799,067 A (KIKINIS et al) 25 August 1998, abstract.	1-28
A,P	US 5,864,299 A (NELMS et al) 26 January 1999, abstract.	1-28
A,E	US 5,974,238 A (CHASE, JR.) 26 October 1999, figs. 1E, 1F, 4.	1-28

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 01 NOVEMBER 1999	Date of mailing of the international search report 14 JAN 2000
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer JASPER KWOH Jeri Hill Telephone No. (703) 305-3900

Form PCT/ISA/210 (second sheet)(July 1992)★